



IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re application of: :  
Cai, Yeping, et. al. :  
Serial No.:10/669,977 :  
Filing Date: September 24, 2003 : Examiner:  
Attorney Docket No. P-1111B :  
For: PROCESS FOR PRODUCTION OF A :  
WATER GAS SHIFT CATALYST :

Hon. Commissioner of Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

INFORMATION DISCLOSURE STATEMENT

While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR §1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such. In accordance with 37 CFR §1.97(b), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR §1.56(a) exists. This information is submitted in compliance with 37 CFR §1.98.

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Respectfully submitted,



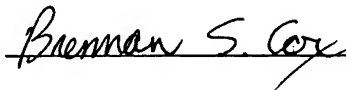
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Pra titi ner's D ck t N . P-1111B ✓**PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Patent application

of \_\_\_\_\_  
Inventor(s)for \_\_\_\_\_  
Title of invention**OR**In re application of: **Cai, Yeping, et al.**Application No.: **010 / 669,977** ✓

Group Art Unit:

Filed: **September 24, 2003** ✓

Examiner:

For: **Process for production of a water gas shift catalyst**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT  
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BEFORE MAILING OF FIRST OFFICE ACTION (37 C.F.R. § 1.97(b))****CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10\****(When using Express Mail, the Express Mail label number is mandatory;  
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NOTE: 37 C.F.R. 1.98(b):

- (1) Each U.S. patent listed in an information disclosure statement must be identified by inventor, patent number, and issue date.
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**WARNING:** No extension of time can be had under 37 C.F.R. § 1.136 (a) or (b) for filing an IDS. 37 C.F.R. § 1.97(f).

NOTE: The "filing date of a national application" under 37 C.F.R. § 1.97(b) has two possible meanings. Where the filing is a direct one to the United States Patent & Trademark Office, the filing is defined in 37 C.F.R. § 1.53(b) as "the date on which: (1) A specification containing a description pursuant to § 1.71 and at least one claim pursuant to § 1.75; and (2) any drawing required by § 1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by § 1.41." 37 C.F.R. § 1.97(b)(1). On the other hand, an international application that enters the national stage occurs when the applicant has filed the documents and fees required by 35 U.S.C. § 371(c) within the periods set forth in § 1.494 or § 1.495. 35 U.S.C. § 371(c) requires the filing of the following: (1) the basic national fee; (2) a copy of the international application, unless already sent by the International Bureau, and optionally an English translation if filed in another language; and, also optionally (3) amendments under PCT Article 19, with a translation into English if made in another language; (4) an oath or declaration; and (5) a translation into English of any annexes to the international preliminary examination report, if such annexes were made in another language. The optional items must be submitted later, with surcharges. 37 C.F.R. § 1.97(b)(2).

### **IDENTIFICATION OF TIME OF FILING THE ACCOMPANYING INFORMATION DISCLOSURE STATEMENT**

The information disclosure statement submitted herewith is being filed within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office action on the merits, whichever event occurs last. 37 C.F.R. § 1.97(b).

NOTE: "No certification or fee is due when the filing is made within the above time period. It is advisable to ensure that no Office action has been mailed if the disclosure statement is delayed until after three months from filing."

NOTE: "An information disclosure statement will be considered to have been filed on the day it was received in the Office, or on an earlier date of a mailing if accompanied by a properly executed certificate of mailing under 37 C.F.R. 1.8, or Express Mail certificate under 37 C.F.R. 1.10. An Office action is mailed on the date indicated in the Office action." Notice of April 20, 1992 (1138 O.G. 37-41, 39). See also § 609, M.P.E.P., 8th Edition.

NOTE: "The term 'national application' includes continuing applications (continuations, divisions, continuations-in-part) so three-months will be measured from the actual filing date of an application as opposed [sic] to the effective date of a continuing application." Notice of April 20, 1992 (1138 O.G. 37-41, 39).

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Action [6-3]—page 2 of 3)

**NOTE:** "An action on the merits means an action which treats the patentability of the claims in an application, as opposed to only formal or procedural requirements. An action on the merits would, for example, contain a rejection or indication of allowability of a claim or claims rather than just a restriction requirements (37 C.F.R. 1.142) or just a requirement for additional fees to have a claim considered (37 C.F.R. 1.16(d)). Thus, if an application was filed on Jan. 1 and the first Office action on the merits was not mailed until six months later on July 1, the examiner would be required to consider any proper information disclosure statement filed prior to July 1." Notice of April 20, 1992 (1138 O.G. 37-41, 39).

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SIGNATURE OF PRACTITIONER

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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

**Complete if Known**

Application Number	10/669,977
Filing Date	SEPTEMBER 24, 2003
First Named Inventor	Cai, et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	P-1111B

## U.S. PATENT DOCUMENTS

[illegible]

**FOREIGN PATENT DOCUMENTS**

[illegible]

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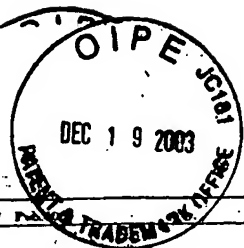
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(P-173-10/97)

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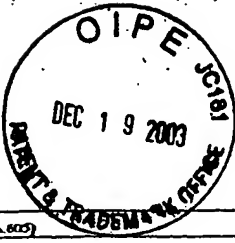
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		D.S. Newsome, Catal. Rev., 21, p. 275 (1980)	
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		M.J.L. Ginés and C.R. Apesteguia, "Thermal Decomposition of Cu-Based Hydroxycarbonate Catalytic Precursors for the Low-Temperature CO-Shift Reaction," Journal of Thermal Analysis 50, pages 745-756 (1997)	
		H. Topsoe and M. Boudart, J. Catal., 31, p. 346 (1973)	
		J. Van Brakel, et al., Powder Technology, 29, p.1 (1981)	
		Figueiredo, R. Tavares, et al. "Spectroscopic evidence of Cu-Al interactions in Cu-Zn-Al mixed oxide catalysts used in CO hydrogenation." Journal of Catalysts, 178, 146-152 (1998)	

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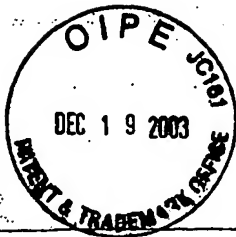
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		Figueiredo, R. T., et al. "The role of the coprecipitation sequence of salt precursors on the genesis of Cu-ZnO-Al <sub>2</sub> O <sub>3</sub> catalysts. Synthesis, Characterization and Activity for Low Temperature Shift Reaction." <i>Brazilian Journal of Chemical Engineering</i> , Volume 5, No. 02, pages 168-176 (June, 1998)	
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		John G. Nunan, et al., "Methanol Synthesis Catalysts Based on Cs/Cu/ZnO/M <sub>2</sub> O <sub>3</sub> (M=Al, Cr, Ga): Genesis from Coprecipitated Hydrotalcite-like Precursors, Solid-state Chemistry, Morphology and Stability," <i>Inorg. Chemistry</i> , 28, 3868-3874 (1989)	

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**OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS**

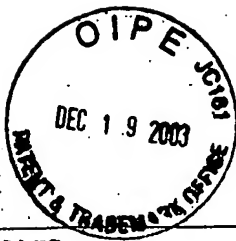
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		N. Ray, et al., "Deactivation of Low Temperature Shift Catalyst," <i>J. Res. Inst. Catalysis, Hokkaido Univ.</i> , Vol. 30, No. 1, pp. 25-38 (1982)	
		P. Gherardi, et al., "Preparation of Cu-Zn-Al Mixed Hydroxycarbonates Precursors of Catalysts for the Synthesis of ethanol at Low Pressure," <i>Preparation of Catalysis III</i> , 723-733 (1983)	
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**INFORMATION DISCLOSURE  
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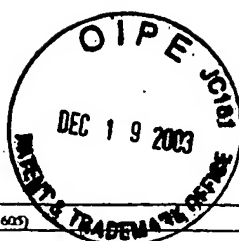
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		J.-L. Li, et al., "Enhancement in methanol synthesis activity of a copper/zinc/aluminum oxide catalyst by ultrasonic treatment during the course of the preparation procedure," <i>Applied Catalysis A: General</i> , 139, 87-96 (1996)	
		R.H. Höppener, et al. "Preparation and Characterization of Stable Copper/Zinc Oxide/ Alumina catalysis for Methanol Synthesis," <i>Applied Catalysis</i> , 25, 109-119 (1986)	
		F. Cavani, et al., "Hydrotalcite-type Anionic Clays: Preparation, Properties and Application" <i>Catalysis Today</i> , 11, 173-301 (1991)	

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		S. Velu, et al., "Oxidative steam reforming of methanol over CuZnAl(Zr)-oxide catalysts; a new and efficient method for the production of CO-free hydrogen for fuel cells." <i>Chem. Commun.</i> , 2341-2342 (1999)	
		S. Velu, et al., "Selective production of hydrogen by partial oxidation of methanol over catalysts derived from CuZnAl-layered double hydroxides" <i>Catalysis Letters</i> 62, 159-167 (1999)	
		Gines, M.J.L., et al., "Activity and structure sensitivity of the water-gas shift reaction over Cu-Zn-Al mixed oxide catalysts." <i>Applied Catalysis A: General</i> 131, 283-296, (1995)	
		Gines, M.J.L., et al., "Thermal Decomposition of Cu-Based Hydroxycarbonate Catalytic Precursors for the Low-temperature CO-Shift Reaction." <i>Journal of Thermal Analysis</i> , 50, 745-756 (1997)	
		Hilmen, Anne-Mette, et al., "Synthesis of higher alcohols on copper catalysts supported on alkali-promoted basic oxides." <i>Applied Catalysis A: General</i> 169, 355-372, (1998)	
		S. Velu, et al., Selective production of hydrogen for fuel cells via oxidative steam reforming of methanol over CuZnAl(Zr)-oxide catalysts." <i>Applied Catalysis A: General</i> 213, 47-63, (2001).	

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